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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Shinji Imoto

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COOPER & DUNHAM, LLP
30 Rockefeller Plaza
20th Floor
NEW YORK, NY 10112

EXAMINER

ZIMMERMANN, JOHN P

ART UNIT

PAPER NUMBER

2861

MAIL DATE

DELIVERY MODE

04/29/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/563,214	Applicant(s) IMOTO ET AL.	
	Examiner John P. Zimmermann	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 39-47 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 41-43 is/are allowed.
- 6) ☒ Claim(s) 1,3-9,38-40,44,46 and 47 is/are rejected.
- 7) ☒ Claim(s) 2 & 45 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Amendments

1. With respect to applicant's Amendments to the claims:
 - a. **Claim 1** has been amended and considered as such.
 - b. **Claims 39-47** have been added and considered as such.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

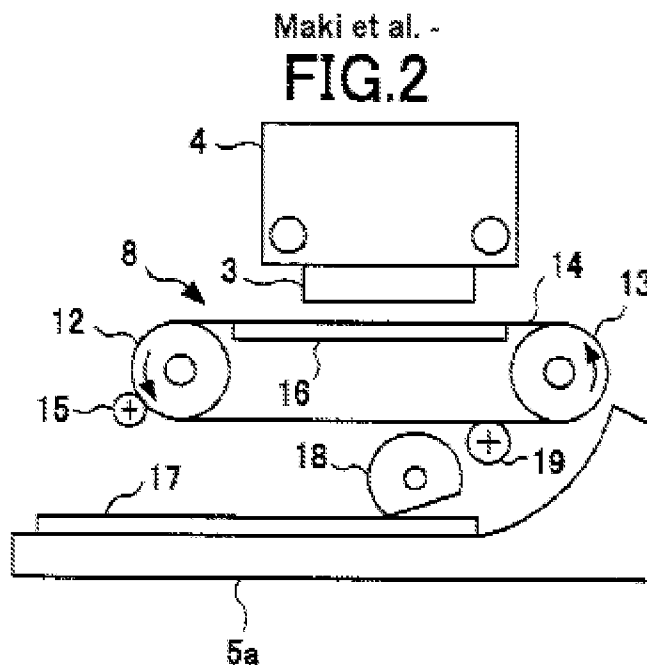
1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

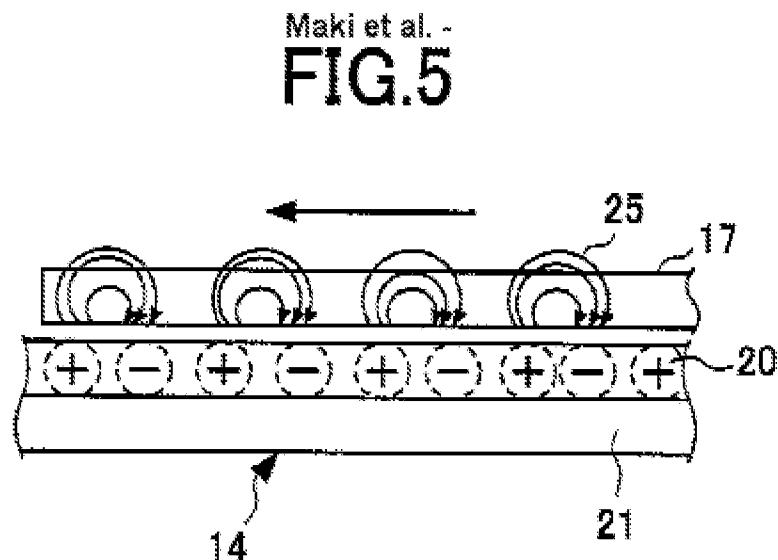
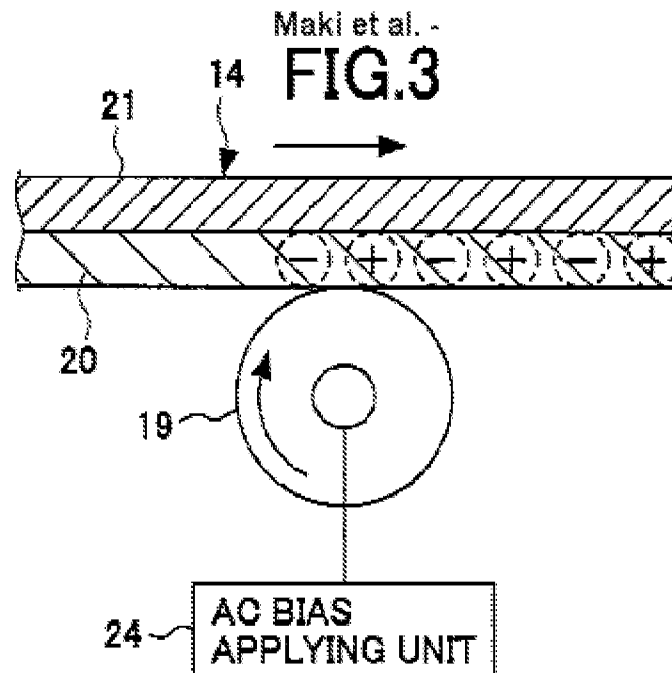
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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. **Claims 1, 3-9, & 44** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Maki et al.** (US 2002/0126193 A1) in view of **Kuwabara et al.** (JP2004-99280) and further in view of **Bannai et al.** (US 5,121,170 A).

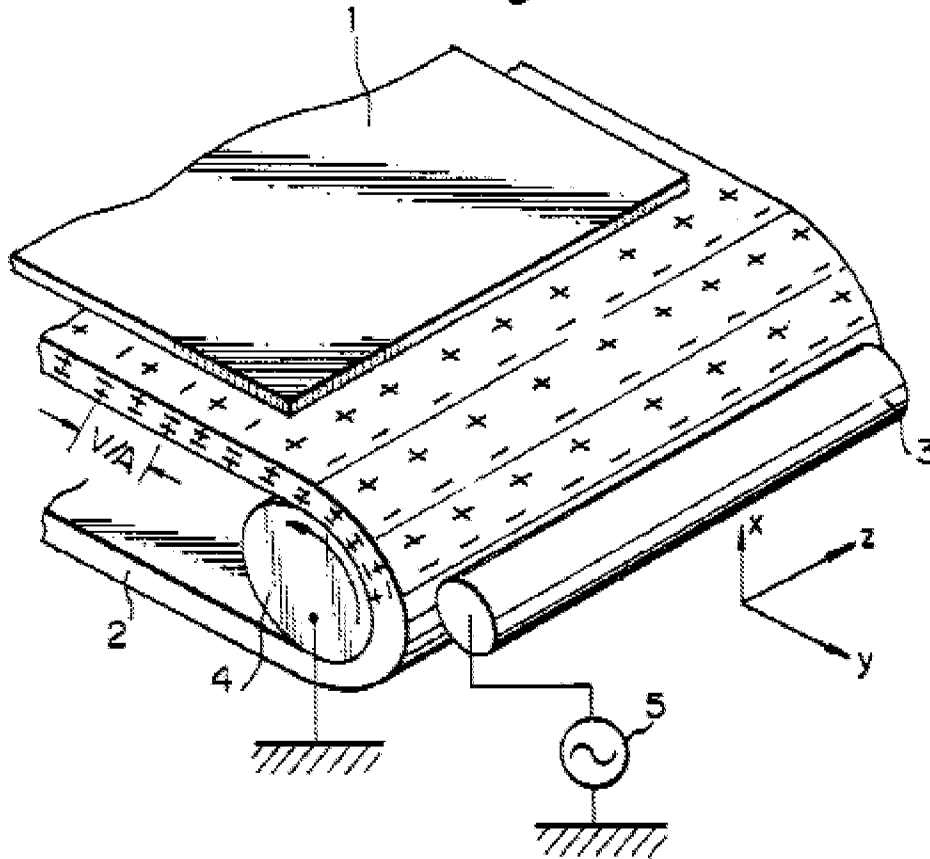
a. As related to independent **claims 1 & 44**, Maki et al. teaches an image forming apparatus and method for conveying a recording medium comprising a conveyance belt that conveys a recording medium by attracting the medium by an electrostatic force generated by positive and negative electric charges applied. A charger that applies the electric charges alternately to the belt, and a recording head discharges droplets of liquid toward the medium being conveyed by the belt (Maki et al. – Detailed Description, Page 7, Paragraph 133 and Figures 2, 3, & 5, Reference #14, #19, #24, & #3, all shown below).





- b. Continuing with **claims 1 & 44**, while Maki et al. *does not* specifically teach a control part and adjusting an amount of electric charges induced on a surface of the recording medium by the positive and negative electric charges applied, one of ordinary skill in the art at the time of the invention would surely understand that varying or

"controlling" the charges applied to the conveyance belt would naturally vary the amount of electric charges induced, by nature of the system. **However**, Kuwabara et al. teaches a similar image forming apparatus with a control part configured to adjust the amount of electric charges used with a conveyance belt and therefore induced on the surface of the recording medium (Kuwabara et al. – Abstract and Paragraphs 0032, 0035, 0036) in reference to a variety of factors. **Additionally**, Maki et al. also teaches that the background of the art at the time of the invention clearly depicts adjusting the amount of the electric charges on the surface of the recording medium to cause the electric charges on the surface of the recording medium to *neutralize* [i.e. negative charge applied to a positively charged surface] and prevent the displacement of the landing spots of ink droplets (Maki et al. – Background, Page 1, Paragraph 6). **Finally**, Bannai et al. teaches a similar transporting member that is charged using an alternating voltage and a control system, which can adjust the amount of electrical charge [i.e. 3kV or 4kV or 500Vp-p] based on a variety of things including adjusting the retaining force (Bannai et al. – Description, Column 7, Line 46 – Column 8, Line 31 and Figure 2A, Reference #4 & #5, shown below).

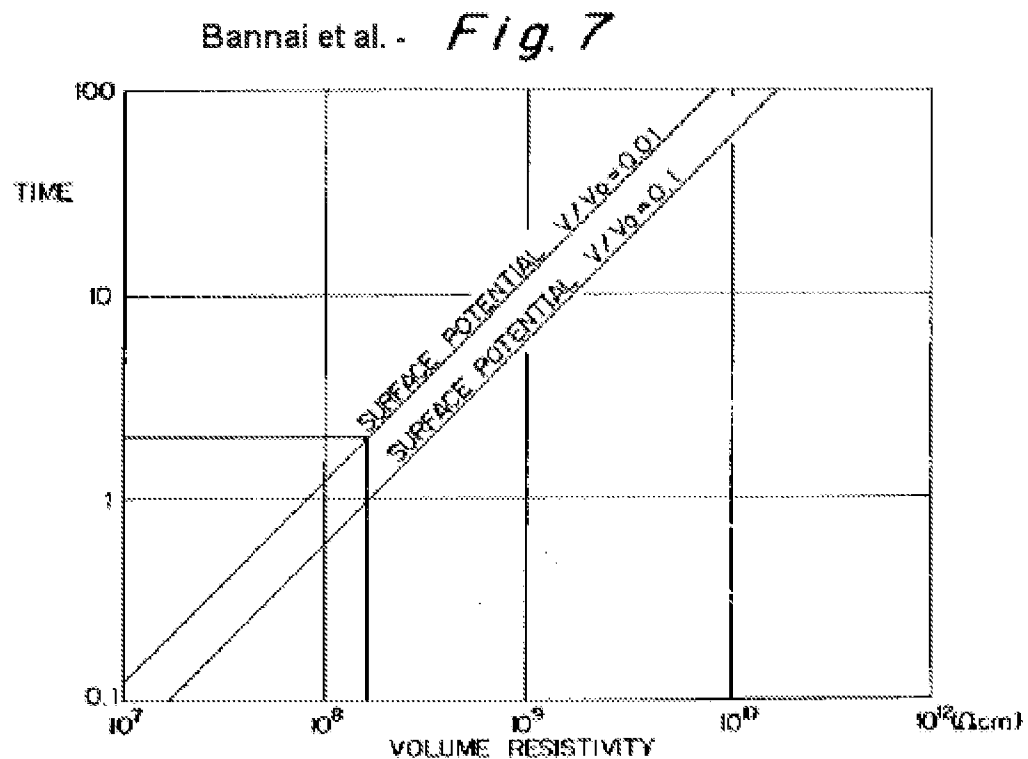
Bannai et al. - *Fig. 2A*

Given the same field of endeavor, specifically an image forming apparatus and the chargeable conveyance mechanism and the method of using the apparatus for conveying a recording medium, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the image forming apparatus with a conveyance belt that is charged in an effort to attract the recording medium as taught by Maki et al. with the image forming apparatus with a conveyance belt that is charged in an effort to attract the recording medium and controlled as taught by Kuwabara et al. and the conveyance device for use in an image forming apparatus with a controller for controlling the amount of electric charge as taught by Bannai et al., in an effort to provide the optimal amount of charge induced on the recording medium to

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ensure a proper retaining force is achieved (Bannai et al. – Description, Column 8, Lines 24-30) while preventing the displacement of the landing spots of the ink drops (Maki et al. – Background, Page 1, Paragraph 6).

c. As related to dependent **claim 3**, the combination of Maki et al., Kuwabara et al., and Bannai et al. remains as applied above and continues to teach the control part adjusts the amount of the electric charges on the surface of the recording medium in accordance with a result of detection of a volume resistance of the recording medium (Bannai et al. – Figure 7, shown below).



d. As related to dependent **claim 4**, the combination of Maki et al., Kuwabara et al., and Bannai et al. remains as applied above and continues to teach the control part adjusts the amount of the electric charges on the surface of the recording medium in accordance

with a result of detection of environment temperature and humidity [i.e. factors of the recording medium such as thickness, surface condition, and others] (Kuwabara et al. – Abstract and Paragraph 32).

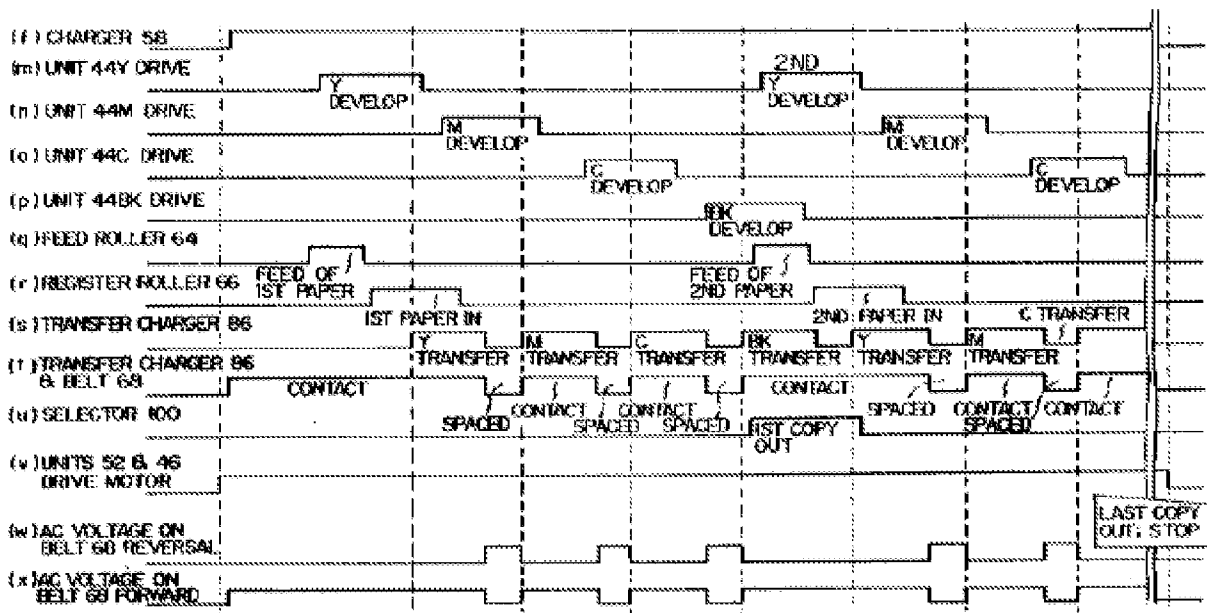
e. As related to dependent **claim 5**, the combination of Maki et al., Kuwabara et al., and Bannai et al. remains as applied above and continues to teach the control part adjusts the amount of the electric charges on the surface of the recording medium in accordance with externally given information regarding the resistance value of the recording medium [i.e. factors of the recording medium including surface condition or charge density] (Kuwabara et al. – Abstract and Paragraph 32 and Bannai et al. – Description, Column 7, Line 25 – Column 8, Line 31) .

f. As related to dependent **claim 6**, the combination of Maki et al., Kuwabara et al., and Bannai et al. remains as applied above and continues to teach the control part adjusts the amount of the electric charges on the surface of the recording medium by controlling a charge period length [i.e. changing the AC voltage frequency] of positive and negative charges applied by the charger to the conveyance belt (Bannai et al. – Description, Column 7, Line 25 – Column 8, Line 31).

g. As related to dependent **claim 7**, the combination of Maki et al., Kuwabara et al., and Bannai et al. remains as applied above and continues to teach the control part adjusts the amount of the electric charges on the surface of the recording medium by controlling an alternating voltage [i.e. changing the AC voltage frequency, or peak-to-peak level] applied to the charger to apply positive and negative charges to the conveyance belt (Bannai et al. – Description, Column 7, Line 25 – Column 8, Line 31).

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h. As related to dependent **claim 8**, the combination of Maki et al., Kuwabara et al., and Bannai et al. remains as applied above and continues to teach the control part adjusts the amount of the electric charges on the surface of the recording medium by controlling a timing of applying electric charges onto the conveyance belt so as to switch existence/nonexistence of charges on the surface of the recording medium [i.e. negative charge to a positive charge or controlling the timing of applying an AC voltage] (Maki et al. – Background, Page 1, Paragraph 6 and Bannai et al. – Figure 16B, Reference #w & #x, shown below).

Bannai et al. - *Fig. 16B*

i. As related to dependent **claim 9**, the combination of Maki et al., Kuwabara et al., and Bannai et al. remains as applied above and continues to teach the control part adjusts the amount of the electric charges on the surface of the recording medium by controlling at least one of a conveyance speed and a stop time of said conveyance belt so as to

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change a time period from a time when the charges are applied to the conveyance belt until a time when the charges on the conveyance belt reach the recording position. (Maki et al. – Detailed Description, Page 7, Paragraphs 133 – 134).

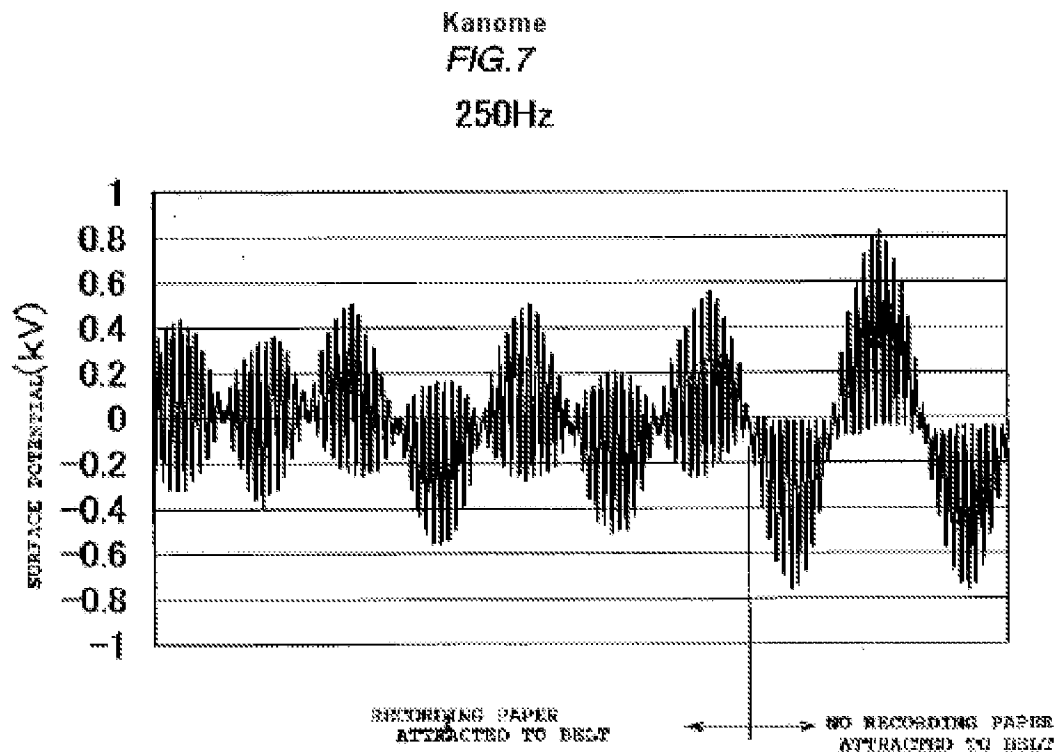
6. **Claims 39-40 & 46-47** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Maki et al.**, (US 2002/0126193 A1) **Kuwabara et al.**, (JP2004-99280) and **Bannai et al.**, (US 5,121,170 A) and further in view of **Kanome** (US 2003/0052955 A1).

a. As related to dependent **claims 39-40**, the combination of Maki et al., Kuwabara et al., and Bannai et al. remains as applied to **claim 1** above and continues to teach the control part adjusts the amount of electric charges on the surface of the recording medium to adjust the surface potential (Bannai et al. – Description, Column 9, Lines 25-45), but *does not* specifically teach a surface potential or volume potential at the recording position is equal to or smaller than 500 Vp-p. *However*, Kanome teaches an image forming apparatus with a conveyance belt, a charger, and a control part that adjusts the amount of the electric charges on the surface of the recording medium so that the surface and volume potential at the recording position is equal to or smaller than 500 Vp-p (Kanome - Title; Abstract; Description, Page 2, Paragraph 26 and Page 3, Paragraphs 41-42; and Figure 7, shown below).

b. As related to dependent **claims 46-47**, the combination of Maki et al., Kuwabara et al., and Bannai et al. remains as applied to **claim 44** above and continues to teach the control part adjusts the amount of electric charges on the surface of the recording medium to adjust the surface potential (Bannai et al. – Description, Column 9, Lines 25-45), but *does not* specifically teach a surface potential or volume potential at the recording

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position is equal to or smaller than 500 Vp-p. *However*, Kanome teaches an image forming method for conveying a recording medium, adjusting a charge on the conveyance belt, and controlling the charger that adjusts the amount of the electric charges on the surface of the recording medium so that the surface and volume potential at the recording position is equal to or smaller than 500 Vp-p (Kanome - Title; Abstract; Description, Page 2, Paragraph 26 and Page 3, Paragraphs 41-42; and Figure 7, shown below).



Response to Arguments

7. Applicant's arguments filed 22 December 2008 have been fully considered but they are not persuasive.

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8. With respect to **claim 1**, and therefore **claims 2-9**, which inherently contain all of the limitations of independent **claim 1**, applicant argued that “Maki does not disclose or suggest adjusting...” and “Kuwabara says nothing whatsoever regarding controlling a charger to neutralize...” and “Further, neither Maki nor Kuwabara (nor any of the other references) discloses or suggests adjusting...” and finally “Further, Bannai does not disclose or suggest adjusting...” With respect to Applicant’s arguments which in can be summed up as arguing that (None) “of the other references discloses or suggests adjusting the amount of electric charges on the surface of the recording medium in accordance with a resistance value of the recording medium,” Examiner respectfully disagrees and points Applicant to the above reiterated rejection. As mentioned above, the combination teaches that the background of the art at the time of the invention clearly depicts adjusting the amount of the electric charges on the surface of the recording medium to cause the electric charges on the surface of the recording medium to *neutralize* [i.e. negative charge applied to a positively charged surface]. This would involve ensuring an optimal amount of charge is induced on the recording medium, which would allow the apparatus to hold the medium to the belt reliably and efficiently while also not interfering with the liquid drop discharge and release of the medium after the printing process is complete. It would also have been obvious to one of ordinary skill in the art to adjust the amount of charges induced on the medium according to the resistance value and detected surface resistance of the medium. Kuwabara et al. discloses a number of different variables that can be used to adjust the charge amount and any other kind of variable including surface resistance can easily be used as well with the apparatus and process of image forming. Additionally, Examiner respectfully mentions, as indicated in the Remarks section by the Applicant, that Kuwabara et al. teaches an

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image forming apparatus and conveyance method with a control part configured to adjust the amount of electric charges used with a conveyance belt and therefore induced on the surface of the recording medium (Kuwabara et al. – Abstract and Paragraphs 0032, 0035, 0036) in reference to a variety of factors, these factors would be well known to one of ordinary skill in the art at the time of the invention to include adjusting the amount of electric charges based on the resistance value of the recording medium. As no further arguments were made, all dependent claims have been rejected accordingly.

Allowable Subject Matter

9. **Claims 41-43** are allowable as independent **claim 41** incorporates the allowable limitations of pending **claim 2** as previously objected to, but indicated as allowable if rewritten in independent form including all of the limitations of the base claim (independent **claim 1**) and any intervening claims.

10. **Claim 2** was previously (and still is) objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim (independent **claim 1**) and any intervening claims.

11. **Claim 45** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim (independent **claim 44**) and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: While the prior art teaches a control part that adjusts the amount of the electric charges on the surface of the recording medium (See rejection of independent **claims 1 & 45**, detailed above),

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the prior art fails to teach or fairly suggest the structural limitation of **a surface resistance measurement part** configured to detect a surface resistance value of the recording medium and the use of that detected value.

Conclusion

13. ***Examiner's Note:*** Examiner has cited particular Figures & Reference Numbers, Columns, Paragraphs and Line Numbers in the references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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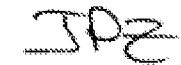
however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P. Zimmermann whose telephone number is (571)270-3049. The examiner can normally be reached on Monday - Thursday, 7:00am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on 571-272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MATTHEW LUU/
Supervisory Patent Examiner, Art Unit 2861



JPZ